CACTUS AND SUCCULENT JOURNAL

Of the Cactus And Succulent Society Of America

Vol. X MARCH, 1939 No. 9

Pelecyphora pseudo-pectinata Backeberg, 1935.
From Palmillas, Northern Mexico.
(See next page)

CACTUS AND SUCCULENT JOURNAL

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Vol. X MARCH, 1939 No. 9

EDITOR'S STATEMENT

The photograph on the February cover of the JOURNAL "Collecting 'Old Men' for F. Schmoll" was found among some old photographs in the Society's files. This photograph was taken in 1928, long before the strict regulation by the Mexican government prohibiting collecting *Cephalocereus senilis*. Mr. Schmoll holds a permit from the Forestry Department which allows him to sell plants from his stock.

PRESIDENT'S MESSAGE

From far away Chili comes to us news of the fate of our very good member, Robert Mora, who was engaged in the preparation of a monograph of the Chilean species for us.

He also entered a wonderful display of cactus in the General Exposition at Concepcion last December to the Society's credit.

Mr. Mora's home was completely destroyed by the recent earthquake but fortunately none of his family were killed. This seems like a miracle as the adjoining house was also destroyed and all of the ten occupants killed. By putting a wooden roof over the basement of the ruins he has found shelter but the loss of all his worldly possessions has left him destitute.

Society members who feel desirous of aiding this member in the ruins of beautiful Concepcion may send contributions to me by money order or check and all such contributions will be acknowledged in the *Journal* and the funds forwarded to Mr. Mora as soon as received.

Here is your opportunity to aid a fellow member with the hope that he will soon be able to continue his scientific work.

Requests for routing of parties through cactus country and via cactus gardens are pouring in and receiving prompt replies. The list of open gardens is growing and types of gardens to interest any collector are on our list. Hope you will be one of those to enjoy western hospitality this summer.

Letters from two of the younger members received this week show a healthy trend for the future. James Gerdemann, 17, of Missouri, and Richard Jacobs, 14, of New York, are both very much interested and are anxious to help in the Society's work. Needless to say work has been found for each and we could use numerous other assistants in our work.

Mr. Oliver Young of Maine is turning in the best detail-photographs we have seen and they will be used in a contemplated monograph on the Ferocacti.

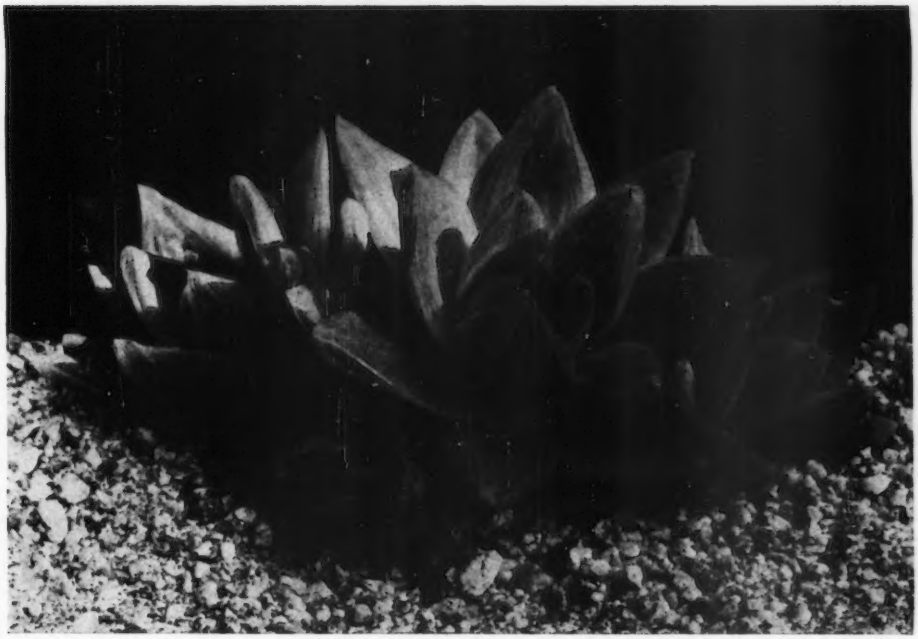
The Tucson Garden Club announces their annual flower show on Tuesday, April 11th, with a large central section devoted to cacti and other succulents. Members are urged to enter in this show. For complete information address our fellow member, Mrs. M. H. Starkweather, P. O. Box 55, Tucson, Arizona, or the President or Corresponding Secretary of the Society.

Greatly enlarged spine cluster of *Pelecyphora pseudo-pectinata* (see illustration on cover)

The "bug" shown in last month's *Journal* was an enlarged spine pattern from *Pelecyphora pseudo-pectinata*. Incidentally, I am greatly intrigued with this plant, secured from Dr. Poindexter last November, and think it much superior to either *P. asseliformis* or *Solisia pectinata*, if I have the identities of these correct. I failed to ask Poindexter the origin of *pseuro-pectinata*, but assume it also comes from Mexico. It must be a rather new discovery, since I do not find it either in B. & R. or in Bailey. It looks much like *P. pectinata* as illustrated in one of Blossfeld's catalogues, but according to the Encyclopedia, *pectinata* has a yellow flower, while *pseudo* has a pink flower streaked with red.

This specimen came through from Poindexter bearing a cluster of 10 buds, but the sudden change incident to re-potting, etc., caused all but two of these to blight. This picture, pg. 145, was taken on Christmas day, and on New Year's day the first one opened, is still opening daily, and the second one now showing color. A lovely plant it is, and so healthy.

H. C. SHETRONE.



Haworthia planifolia Haw. nat. size.

Notes on Haworthias

By J. R. BROWN

Haworthia planifolia Haw. in Phil. Mag. (1825) 282; Berger in Pflanzenreich IV. 38. (1908) 102; Poelln. in Repert. Sp. Nov. XLIV (1938) 220, in Kakteenkunde (1938) 53. *Haworthia cymbiformis* var. *planifolia* Bak. in Journ. Linn. Soc. XVIII (1880) 209. *Aloe planifolia* Salm. Monogr. (1836-49) sec. XI. fig. 2.

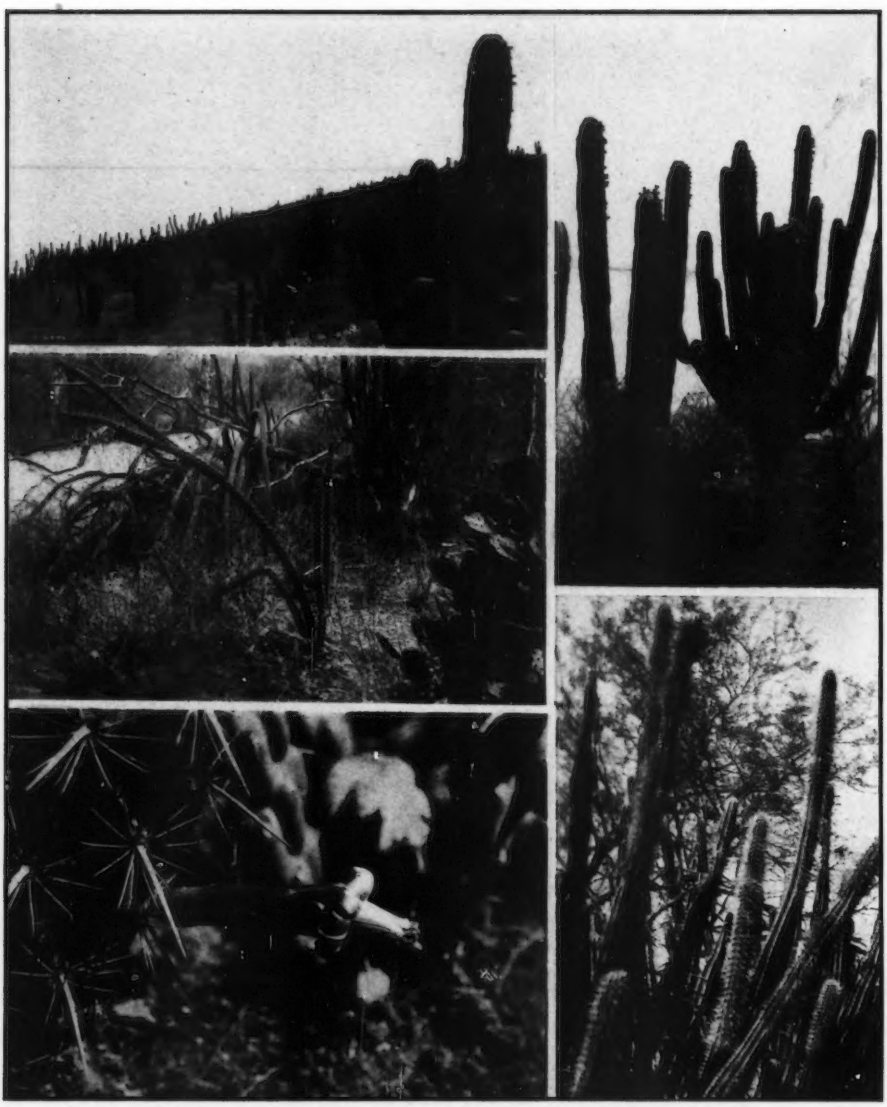
Plant 7-10 cm. in diam. with 20-25 leaves, proliferous from the base and soon forming a cluster. Leaves ovate, shortly acuminate and ending in a very short point, 3.5-4.5 cm. long, 2-2.5 cm. wide, younger leaves erect, incurving, the older leaves spreading, face more or less flat and with 1 or 2 (usually 2) lengthwise grooves, the back slightly rounded, somewhat obliquely keeled and slightly thickened towards the tip, smooth, pale green, gradually becoming more pellucid towards the tip and with numerous anastomosing lines on face and back. Peduncle erect, 30 cm. and more tall; flowers almost sessile; bracts deltoid acute, 6 mm. long; perianth 15 mm. long, tube slightly tinged pink, green lined, the recurved segments tinged pink.

Locality: Type locality unknown. Received at Kew from Bowie about the year 1825.

Received by the writer from South Africa, but without locality, probably from the vicinity of Port Elizabeth.

Haworthia planifolia Haw. of the sect. *Planifoliae* Berger is distinct from *Haworthia cymbiformis* Haw. by its wider and flatter leaves, the older leaves more spreading and the paler green color.

The plant shown in the illustration of this Haworthia was in full growth, showing the older leaves quite spreading and flat, during the dormant period the leaves become more incurved and the faces somewhat concave. As is usual in Haworthias which have fairly large rosettes of leaves and which ultimately form a cluster, a single rosette can be grown to a much larger size than any of the many rosettes of an older plant.



LEFT (*Top*): *Pachycereus pringlei* as it covers the islands in the bay at Guaymas. (*Center*): *Rathbunia almosensis*—the open growing type common around Alamos. LOWER LEFT: Close-up of flower of *R. alamosensis*. TOP RIGHT: *P. pringlei* bearing flowers and immature fruit. LOWER RIGHT: *Lophocereus schottii*, the many-ribbed type near Guaymas.

EIGHT DAYS IN SONORA

By GEORGE LINDSAY

Our problem was a serious one. We had a short week's spring holiday, but didn't know where to go. We wanted to see new and interesting cactus districts, but already knew the nearby California, Lower California, and Arizona deserts. The answer seemed to be Sonora,

of which we had had a taste during a run to Guaymas the previous spring. The state had intrigued us, so after carefully budgeting our time to the hour we decided to try it.

Cutting a few lectures, we left the "think factory" in San Diego at noon Friday, April 8. Two hours later we were enjoying the beautiful scenery of Mountain Springs grade, as it dips from the Laguna mountains into Imperial Valley. The hills are a confusion of granite boulders, among which an occasional *Ferocactus acanthodes* lifts its head. An hour more and we were through bustling young El Centro. Another hour and we stood watching huge diesel shovels gouging the All-American Canal through the famous Yuma sand hills, familiar to all cinema goers as the setting for Sahara scenes. After a brief state-line inspection at the Colorado river, we arrived in Yuma for dinner.

It was dark as we left Yuma, so we missed seeing the first sahuaros on the hills a few miles east. Our headlights did pick out the gnarled forms of some Elephant trees (*Bursera microphylla* Gray) on the steep grade west of Welton. Midnight found us asleep in Tucson.

After a hearty breakfast and brief car check over in Tucson, we headed for the border town of Nogales, stopping only a few minutes at Tumacacori to see the old mission and to look again for the common but ever beautiful *Echinocereus rigidissimus* growing in the hills along the road. An hour was spent in the customs and immigration offices at Nogales, getting our papers and permits validated and in a thorough inspection. We were in Sonora!

South of Nogales the road winds through low hills, which in many places bear plants of *Echinocereus rigidissimus* and *E. fendleri,* as well as *Coryphantha recurvata* and several Opuntias. We had dinner in the pleasant little town of Magdalena, which is the burial place of that intrepid early explorer and colonizer, Father Kino.

Near Magdalena one first encounters *Lophocereus schottii.* In this region, which is the type locality of the species, the plants have much the same form as those of the same species in Arizona and throughout Lower California, that is with stems some four inches in diameter and bearing only five or six ribs. As one travels south he may notice that the stems become increasingly thinner, until below Guaymas the species forms huge clumps of stems usually less than two and one half inches in diameter, but bearing ten or twelve or even thirteen ribs. These plants superficially resemble *Lophocereus gatesii* of Lower California.

South of Magdalena we noticed a fine crest of *Carnegiea gigantea* hidden away in a narrow little canyon. Also, if one were to look under the bushes near the road, he would probably see plants of biscuit-shaped *Mammillaria mainae.*

The road is good and straight all of the way to Hermosillo, passing over broad plains where caution is necessary in driving because of dull cattle which may blunder onto the road. We were thrilled when a splendid buck deer passed in front so near I had to use the emergency to avoid hitting him.

We stopped in Hermosillo only long enough to service the car and get a light lunch, and again headed south. A few miles farther we noticed the first specimens of a huge straight-spined form of *Ferocactus covillei* growing on silty flats to a height of over seven feet. *Ferocactus wislizeni* was of course with us from southern Arizona to as far south as we went. Night soon fell, so we missed seeing the splendid specimens of *Pachycereus pecten-aboriginum,* which a few miles north of Guaymas form the northern vanguard of this species which is so abundant to the south. We arrived in Guaymas about midnight.

After breakfast we again started south, our time not allowing us to visit San Carlos Bay, the type locality of *Mammillaria johnstonii.* From Empalme south for forty miles we noticed more specimens of the straight-spined form of *Ferocactus covillei.*

Soon we were out on the dusty and bumpy road crossing the Yaqui plain. This plain is very interesting, both because the Mexican government considers the Yaquis still dangerous enough to require all travelers to report to picturesque little mud forts scattered along the way, and because it supports one of the most luxuriant cactus forests I have ever seen. For miles one passes through millions of huge *Lemaireocereus thurberi* and *Pachycereus pecten-aboriginum,* between which grow the shorter *Lophocereus schottii,* broad clumps of *Rathbunia alamosensis,* and various Mammillarias, Ferocacti, and Opuntias. What feasts the natives must have in July, the fruiting time of the abundant "pitahaya dulce" (*Lemaireocereus thurberi*)!

After fording the Rio Yaqui and Rio Mayo we arrived at the little town of Ciudad Obregon, noted for flour mills and revolutions. There we took time out for tire repairs and drove on to the modern town of Navajoa, which is Mexico's wheat center. After dinner we left the coast road and took a little old mining road which wound through and over the hills toward Alamos. Our camp that evening was a few miles west of that city.

Early the next morning we were in Alamos, which is, I believe, one of the most beautiful cities in Mexico. Unfortunately, (or perhaps

TOP ROW: 1. Huge specimen of straight spined *Ferocactus covellei* growing below Hermosillo. 2. *Echinocereus luteus* in flower. 3. *Pachycereus pecten-aboriginum*, mature plant bearing fruit. CENTER ROW: *Lemaireocereus montanus* near Giricobi. 5. *L. thurberi* near Hermosillo. 6. *Echinocereus stoloniferus*. BOTTOM ROW: 7. "Champion," my small but efficient guide and a large *Ferocactus alamosanus*. 8. *Cephalocereus alensis* with its normal dense vegetation which make photographing difficult. 9. Close up of same plant.

fortunately), it is so far from the beaten path that few Americans except mining men (and cactus collectors) know the town. Is it enough to say that the hotel in which we had breakfast was two hundred years old and a perfect gem of Mexican Colonial architecture, and that the younger buildings in town were constructed in the first years of the nineteenth century? We wanted to spend days there, but took only time enough for breakfast and walk through the market.

We bounced over the cobbled streets of Alamos and out onto the old freight and mail road to Fuerte, which is reputed to be over two hundred and fifty years old. It wriggles through the mountains, passing a ruin here, a stone wall there, and occasionally a palm-thatched ranch-eria. A few miles from Alamos the road turned from the ancient Fuerte camino and led over several miles of high, thickly forested plateau to suddenly drop into a deep canyon. I was pleasantly surprised to see a fine grove of stately cypress trees lining the stream. I was later to learn that nearly every stream in the vicinity was bordered by groves of the same trees.

Shortly after noon we arrived at the village of Guirocoba, which we drove through in order to reach our final destination, the McCarty Ranch. Here the road ends, but who would wish to drive farther? The hospitality of the McCarty's is proverbial, horses are to be had, and one is in the heart of the cactus country.

After a regular Kansas farm dinner we started on foot toward the hills to hunt cacti. Our first thrill came with finding a splendid plant of *Ferocactus alamosanus* nearly three feet tall. This species differs from most of the others of its genus in not being heavily armed. Around rocky cliffs we found stately specimens of *Lemaireocereus montanus* in abundance. Mr. Marshall had kindly given me directions for finding the type locality of his *Echinocereus stoloniferus* as well as a proof print of its description which was subsequently published in the April issue of the *Journal*. We found the interesting little plant growing in only the most rocky locations on cliffs. Its method of reproduction, which is described in its name, is especially curious. Our next find was in a shady little side canyon. It was the attractive, nearly spineless little *Echinocereus luteus*. This species is very happy in captivity; one which I collected there and which is now in my garden, recently sent forth many beautiful clear yellow flowers. In its native habitat the plant is always found growing in the shade. *Pereskiopsis porteri* was often to be seen growing along arroyo bottoms, while *Mammillaria standleyi* was always to be found singly or in small clumps, hanging somewhere on the cliffs. We returned to the ranch for supper, tired indeed, but very happy.

The next morning, with guide and horses, we started for Agua Caliente in search of beautiful but rare *Cephalocereus alensis*. We started early, and were amused by the many parrots which flew screaming about the tall cypress trees and cliffs. In one tree alone we counted four pairs of brilliant macaws, all of which were over two feet long. Hardly less noisy or colorful were the huge Mexican jays. We soon began to see fine large specimens of hairy *C. alensis* growing in the dense forest, which very fact made them almost impossible to photograph. My collecting finished, we returned to the ranch, where we spent the late afternoon taking notes and collecting herbarium specimens. Another plant of great beauty was the graceful little fan palm, *Erythea edulis*, which was abundant through the valleys. Nearly all of the houses in Guirocoba were thatched with its leaves.

We started back the next day, driving to the Yaqui Valley that night, to Magdalena the following, and taking our plants through customs and agriculture inspection on Friday. We were home Saturday noon.

Our excursion was very much of a success, and we made in eight days a trip which we had been warned would take at least two weeks. Our good fortune was mainly due to several kind friends who knew the region and who had given me advice and invaluable information on where to find the plants.

POTTING CACTI

Just a little wrinkle that will help in potting. I use discarded metal bottle caps to cover the drainage hole. They are sufficiently sprung to allow water through but not enough to let insects in. I hold them firmly centralized with a rod so they will not shift while pouring in an inch or so of gravel in which I sprinkle some crude naphthaline, or a moth ball will do as a further detrement to insects. On the gravel place a screen of dried moss or granulated peat to prevent the soil from sifting through and in this a liberal dash of granulated charcoal as a purifier. Plant your cactus and cover the surface with gravel; it gives them a dressy appearance and prevents mud splashing up on the plant when it rains.

C. W. ARMSTRONG, *Canada.*

GRAFTING

A Department conducted by Frank R. Mark, 825 Elyria Drive, Los Angeles. Mail him your problems.

FRANK R. MARK

Dear Sir:

First of all I will tell you that I am a rabid cactus fan, and reader of the JOURNAL. I have an 18x14 glass house, two 8x24 lath houses, and a collection that is overflowing into the vacant lot next door. Actually, I would rather graft than eat. I add to my collection by trading the plants propagated by grafting, as well as purchasing the more choice ones. Crests are my special pets, although I am too well spread-out in my pets to specialize in any one species.

There is only one plant which I really have trouble with, namely *Neoporteria reichei*. I have about two dozen grafted normals, and three small crests of the plant. I imagine I have grafted three or four times that many, using all the types of stock which I have, and attempting all the seasons. The plants seemingly are grafted during the first week. The union seems to be complete. However, the 2nd, 3rd, and 4th weeks go by and the plant does not grow, but begins to shrivel. About this time the scion can be pulled easily away from the stock to reveal a nice brown callous on both stock and scion. I have better luck when grafting on *T. spachianus* than on ordinary Cereus. Also, the Fall seems to favor the grafting of this culprit.

You will find enclosed, a stamped, addressed envelope. I will be very glad to hear from you concerning this one. Perhaps you have had a different experience with it. A. F. W., Corona, Calif.

Answer: While the tone of his letter would indicate that Mr. Willhite is an experienced propagator, he is indeed fortunate in having trouble with only one species; most of us have several to worry about.

N. reichei is one of the more difficult species to graft, however. It is rather slow-growing and for that reason the graft should only be attempted when both the stock and scion are in the "pink" of condition; that is, both should actually be making new growth.

The stocks mentioned are both good for this plant. *Selenicereus macdonaldiae* is equally satisfactory. As to the time of grafting, I would much prefer the hot summer months, as it is a well-known fact that the percentage of loss is much greater in the fall due to the stock, or scion, or both becoming dormant before the union is complete. The new growth then stops, and both surfaces heal over and the scion drops off as mentioned above.

GARDEN NOTES

It is almost too early to start grafting at this time, even in Southern California, but now is the time to start preparations. For the benefit of those who do not have a supply of stock, I would suggest securing some immediately and get it set out.

Spineless Opuntia is fine for the amateur to experiment on, as it is plentiful, easy to root, grows fast, and makes an excellent stock for several genera. Select large uniform pads, cut off at the joint, dip the ends in sulphur and let dry two weeks before planting either in large pots or outside in equal parts sand, loam and leafmold. Keep moist but not wet. For better grade of stock, secure cuttings of *Trichocereus spachianus* or *Cereus hildmannianus*, 12 inches or more in length and, preferably, cut at the joints. Treat the same as above.

For small grafts, Cereus seedlings, *Nyctocereus serpentinus*, and *Selenicereus macdonaldiae* make satisfactory stock, but the *macdonaldiae* should have part shade as in a lath house. Further details of what species may be grafted on each stock will be given in a later issue of the JOURNAL.

FRANK R. MARK.

SCHEDULE OF MEETINGS K I O CACTUS CLUB

April 15, 1939—6010 Wiehe Rd., Cincinnati, Ohio.
May 20, 1939—3146 Rosina Ave., Latonia, Ky.
June 17, 1939—R. R. 1, Morrow, Ohio.
July 15, 1939—214 Washington St., Bellecue, Ky.
August 19, 1939—R. R. 4, Beattytown, Springfield, Ohio.
September 16, 1939—1714 Taft Rd., Cincinnati, Ohio.
October 21, 1939—Covington, Ky.
November 18, 1939—Ayers Rd., R. R. 13, Cincinnati, Ohio.
December, 1939—No meeting.
January 20, 1940—6433 Bramble Ave., Madisonville, Cincinnati, Ohio.
February 17, 1940—3943 Regent Ave., Norwood, Cincinnati, Ohio.
March 16, 1940—7444 Clovernook Ave., Mt. Healthy, Cincinnati, Ohio.
April 20, 1940—385 Howell, Cincinnati, Ohio.

Since there may be changes in any schedule, please ask the Secretary, at 1797 Taft Road, Station D, Cincinnati, Ohio, for information before you attend. Visitors welcome.

Amendment to the Constitution of the Cactus and Succulent Society of America

Article IX, to read as follows:

Section 1. Any cactus and succulent society or other horticultural society whose objects correspond with the objects of the CACTUS AND SUCCULENT SOCIETY OF AMERICA, INC., may affiliate with the Society upon approval of its application for affiliation and of its constitution and by-laws by the Board of Directors of the CACTUS AND SUCCULENT SOCIETY OF AMERICA, INC.

An affiliated society shall be completely independent of the CACTUS AND SUCCULENT SOCIETY OF AMERICA, INC., as regards the conduct of its own affairs and has not and shall not, in the future, be liable for any indebtedness incurred by the CACTUS AND SUCCULENT SOCIETY OF AMERICA, INC.

The affiliation may be terminated by resignation or by action of the Board of Directors of the CACTUS AND SUCCULENT SOCIETY OF AMERICA, INC., for adequate cause.

BOOK REVIEW

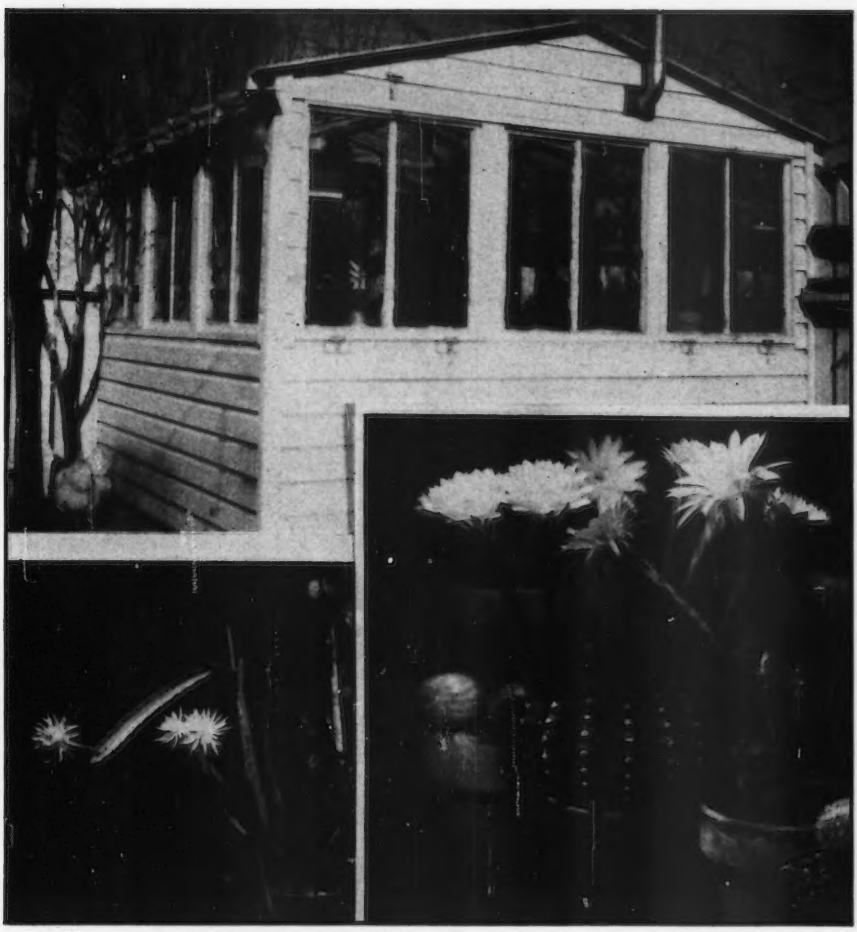
THE CULTIVATION OF SUCCULENTS by H. Jacobsen. Translated into English by Vera Higgins. 106 pages 4¾x7¼, 8 illustrations. Published by Williams Norgate, Ltd., London, England. (Price 5 shillings plus postage.)

The author who is curator of the Botanical Gardens, Kiel, has made available this long needed book and among the chapters are: Imported Plants, Seed Production, Propagation by Seed, Vegetative Propagation, Diseases, Pests, Labelling and Summary of the Genera.

By all means order Mr. Jacobsen's new book direct from the publisher or order from Box 101, Pasadena, Calif. An invoice will be mailed when the book is shipped in about 60 days. Price about $1.35.

SCOTT E. HASELTON.

The following 8 pages are the 12th and 13th installments of the Illustrated Glossary which started in March, 1938.



Greenhouse built by Mr. I. W. Woolsey and a *Hylocereus undatus* proving that "it works." LOWER RIGHT: Mr. John Blea of Rosewell, New Mexico, has no difficulty in flowering pot grown *Echinopsis.*

Care of Cacti in New Mexico

In my zeal for collecting cacti that would not stand our rather severe climate here, I decided I either had to curtail my hobby or find a suitable place to keep the ever increasing number of plants. I decided on a 9x9 size for a small greenhouse.

An 8-inch wide by 12-inch deep concrete foundation was first run. We happened to be able to get eleven second-hand windows about 36-inches high and 30-inches wide. That gave me three on each side except the side where the door was placed, which took the place of one window. Two windows on the south side were put on hinges for ventilation when needed. I used siding the first 3 feet high all around, which, with the windows and casing, gave me about 6-feet, 6-inch at the eaves and about 8 feet at the peak.

I set the rafters the right width apart to accommodate a 14-inch glass—cleats were nailed on the inside of each rafter and the glass laid in, overlapping each other and then puttied. A heavy wire screen was put on over the roof to protect from hail.

A small gas heating unit (floor furnace) was installed on the level with the floor and vented. The proper venting is very important for even cacti will not do well where there are gas fumes.

The floor, by the way, is just pea gravel. About 3 feet of dirt was taken out and the fine gravel put in. Shelves can be arranged on all sides to suit the builder. I have some 100 plants all together and it is not full.

Any cactus fan will get a real thrill out of one of these small greenhouses, especially when everything is brown and frozen outside.

It is not advisable to keep the greenhouse warm enough to stimulate much growth as cacti require a semi-dormant period, and will do better for it next summer—45 to 55 degrees is about right. Here in New Mexico, the days are nearly always warm enough without heat, but the nights may get down to 10 or 15 above—even colder several times during the winter. Nearly all plants grown in California or Old Mexico must be kept indoors.

The total cost without labor, is around $85.00 including heater, if second-hand windows are found at a reasonable price. Any further information will be gladly given.

We do not take any special pains in growing these cacti in pots except to make a mixture of virgin soil and sand—about one soil to two sand with small size gravel at the bottom of the pot. A small amount of powdered lime (old plaster) is usually added.

I. W. WOOLSEY
Secy. Roswell Cactus Club.

DR. NATHANIEL BRITTON

Biographical Memoir of Nathaniel Lord Britton by E. D. Merrill. Presented to The National Academy of Sciences at the annual meeting in 1938. Society members feel a lasting friendship for the late Dr. Britton who was our first Life Member and a loyal contributor. Dr. Britton's constant encouragement helped the *Journal* become the leading scientific cactus journal.

Dr. Merrill quotes Dr. Marshall Howe for the achievements of this botanist, "Opportunity and the man conjoined to make the career of Nathaniel Lord Britton a notable one. The City of New York, spacious and wealthy, was a fitting site for an institution to be devoted to the study of plant sciences and to the public display of plants and plant products of scientific, economic, and horticultural interest. Doctor Britton was the man of vision, energy, and resource, who, above all others, made the dream of a few a living reality. In a very large measure, it was his driving, vitalizing force that, within less than thirty-five years, converted raw materials into the New York Botanical Garden, one of the leading institutions of the kind in the world."

The story of Dr. Britton's determination is outstanding and few scientists have those unique qualifications that build a living scientific institution to carry on their work. Quoting Mr. Merrill:

"He was an individual of pronounced ideas, and in the often acrid nomenclatural controversies of the last decade of the last century and the first decades of the present one, he was an outstanding champion of strict priority in publication and a strong exponent of the so-called 'American' code of botanical nomenclature as contrasted to the international rules. As a result his own publications and most of those prepared by his associates in New York were issued under the 'American' code. Many botanists frankly admit that certain provision of the 'American' code were superior to the original provisions of the International code. The two are now so measurably close, except on the two questions of conserved generic names and Latin diagnoses, that the acrid controversies of the productive years of Doctor Britton's botanical career are now but a memory. Differences of opinion could not be avoided between exponents of the conservative viewpoint in nomenclature and the progressive or liberal element, and Dr. Britton was a consistent liberal.

"While Doctor Britton would be considered conservative in the matter of delimiting species, in generic segregation he was extreme, rather than conservative, tending to separate genera on what many botanists consider to be slight characters. Essentially, genera and species being subjective concepts, rather than objective realities, no such thing as legislative authority, as to what shall constitute the limits of a genus or a species, is possible. Doctor Britton did not dictate to his associates and subordinates, but rather let each use his own judgment on the complex problem of what constitutes the limits of this or that major or minor group. Always an individual of strong convictions, never hesitating to express his own ideas, no matter whether others might be expected to agree with him or not, Doctor Britton continued his productive work regardless of some perhaps just, but some distinctly unjust criticism. He knew what he desired to accomplish and was eminently successful in devising ways and means of accomplishing his purpose."

The Bibliography is contributed by John Hendley Barnhart and dates from October, 1877, to April, 1936, and consists of more than 800 published contributions to science.

In 1930 Dr. Britton acknowledged the *Cactus Journal* with an article on "The Native Cactaceae of Porto Rico and the Virgin Islands." From that date the *Cactus Journal* was one of the main sources for publishing Dr. Britton's papers. Of the last nine papers preceeding his death five appeared in this magazine.

There is little wonder that the name of Dr. Britton is synonymous with our work and this publication.

SMALL LETTERS IN SPECIFIC NAMES

I have read with considerable interest the discussion concerning the use of capitalization in specific names. Personally, I am opposed to it. As I told you before, I am a geologist and my special field is paleontology. Paleontologists and paleobotanists, like zoologists, do not use capitals in specific names of fossil animals and plants. Since three of the four groups of scientists who deal with this type of nomenclature never capitalize specific names, I can see no good reason for the botanists to adopt a "rugged individualist" attitude in this respect.

JOHN W. SKINNER, Texas.

SELFISH COLLECTORS!

I still receive letters from people asking information about cacti since the publication of my story in *Better Homes and Gardens*. One came this morning from Nashville, Tenn. I have answered most of them except where they asked for cuttings without even sending postage. One woman in Canada wanted a cutting of my Bishop's Cap to give to a friend!

MRS. HARRY LEWIS, Seattle.

The cacti are most prolific among the scrubby red oaks, where the valley rises to meet the hills. An average size clump is about four feet.

WISCONSIN OPUNTIA

By HARRY BARWICK

NOTE: *Gray's Manual of Botany* is generally used in Wisconsin and in the adjoining states. This manual uses the name of *Opuntia rafinesquii.* According to the international rules, *Opuntia compressa* is the correct name for this plant although Britton and Rose claim it to be *Opuntia opuntia.* Volume 8, page 175 in this JOURNAL has a splendid article entitled "Opuntia Names" which covers the nomenclature of this plant thoroughly. H. B.

Albert M. Fuller, curator of Botany at the Milwaukee Public Museum, invited me to join him on a field trip to gather material in preparation to laying out an ecological botanical diorama of the *Opuntia rafinesquii.* When this opportunity to visit the Opuntia in its natural habitat presented itself, I was glad to accept.

On the morning of July 2, 1937, the curator, artist, modeler, photographer and I started from Milwaukee by automobile. The eighty-five miles westward to Madison, the state capitol, is a rolling country of fertile farmlands. From Madison we traveled to the northwest. A few miles out the country became rugged and more difficult to travel, and the region is suitable only for grazing. The road we took was not paved and the cars in passing picked up a lot of dust so that the vegetation alongside was covered with it. This type of country makes up the entire southwest of Wisconsin. On nearing our destination, we entered the Wisconsin river valley at a town called Arena. The Wisconsin river is the largest and longest in Wisconsin, running about three fourths of the length of the state. It winds down the center and out the southwest corner, emptying into the Mississippi river, which is the western border line of Wisconsin.

On the outskirts of Arena we caught sight of the first *Opuntia rafinesquii,* a single three foot clump in flower. The land around Arena is sandy and somewhat level and the farms are few. The road took us close to the river where the vegetation is dense and so we did not see any

more cacti until we had crossed the river, driven through Spring Green, and reached our destination two miles north of the town. At this location the cacti are plentiful and are found growing up to the road.

We had reached the cacti country when the flowering season was in its prime. Looking up and down the valley we saw patches of yellow as far as the eye could see. Here were hundreds of acres of *Opuntia rafinesquii*. Walking a few paces to scrutinize an especially well flowered clump of cacti I saw something streak from below its pads and stop after running a few feet. It was one of the Six-lined Lizards (*Cnemidophorus sexlineatus*), about six inches long, which are always found among the cacti in this region.

In constructing an ecological botanical diorama it is necessary to get photographs, sketches and to collect material. As this was being done under the supervision of Mr. Fuller, I had a chance to study the Opuntia more closely. The first thing that I was attracted to were the beautiful flowers (Fig. 1). When fully open they are seven to eight centimeters across. The petals are yellow and tinged with a little orange at the base. There are from fifteen to seventeen petals on a flower. On some, the petals are all yellow, but these are few. Yellow-green stigma lobes protrude above the dense tuft of yellow filaments. The ovary is four to five centimeters long and sparsely tufted with glochids. The stem segments are eighteen to twenty centimeters long and eight to ten centimeters wide. The plants grow prostrate, never more than two joints high. One picked at random had eight joints growing end to end, which might be eight years old. The young segments generally come from the end of the old. A large percentage of the segments are shaken off by grazing cattle and thus start a new plant. The old segments in the third year turn brown and woody. Only a small percentage of seeds germinate. A test of the soil at the base of a number of plants showed it to be decidedly acid (P. H. 4-5).

Sometime in the past the curator had come across this spot and had decided that it would be a good location to depict as the cacti diorama. Now, the curator, the artist and the photographer go over the location and choose the background. The photographer takes pictures, and the artist sets up his easel and makes a rough sketch of the background. The same territory is again covered by photographer and modeler and a foreground is chosen. Photographs are taken of clumps of cacti and surrounding vegetation. The modeler studies and collects specimens to take back, from which he will make exact copies. He takes detailed notes so that the reproductions are flawless. A staff of workers will work six months to complete an ecological botanical diorama.

The following is a description of how such a diorama is exhibited in the museum: The outside dimensions of the case holding the diorama are nine feet high, three feet deep and six feet wide. Three feet from the floor in front of the case is a square opening covered with glass, through which a person can look in on the scene before him. The background of the diorama is painted on a half-round quarter-inch cork linoleum, six feet in diameter and six feet high. The foreground consists of models of the plants and part of the landscape. A label is attached at the side describing the diorama and its locality. The scene is artificially lighted.

While the other men were engaged in studying and collecting, Mr. Fuller and I began to climb the first of a series of steep hills. Progressing slowly upward we noticed a gradual change in the vegetation. At the foot of the hill growing with the cacti were the Lead Plant (*Amorpha canescens*) and Cat-gut (*Tephrosia virginiana*). At the top we saw the Bluebells or Harebells (*Campanula rotundifolia*).

Weary from the climb, we sat down on the rock ledge, dangled our legs in space and viewed the valley below (Fig. 2). In the foreground we could see sand, cacti and grass. The sweep of the valley looked beautiful from here. In the distance we saw the river, shrubbery, trees and the town of Spring Green. In the foreground the land was fenced for pasture and although the other vegetation was sparse, it was observed that where cattle had grazed it had helped the cacti to propagate. We sat there taking in this beauty and the fresh air, and talked of the origin of cacti in this valley. This section near Spring Green is in the driftless area untouched by the glacier which covered most of northern and eastern Wisconsin. The sand of the valley had been cut from the hills by the washing back and forth, and raising and lowering of the river. The distribution of the *Opuntia rafinesquii* in Wisconsin is along the valley of the Wisconsin river and its tributaries which travel down the center of the state some two hundred miles.

On the slope of this first hill we saw few cacti. As we walked along the ridges, we noticed an increase in cacti, but along with that there was a decrease in the amount of limestone which was quite plentiful on the first hill. The third hill was nearly all sandstone. As we began our descent, we found near the top, Red Cedars and Junipers growing in large clumps. Some clumps of Junipers covered a spot four hundred square feet.

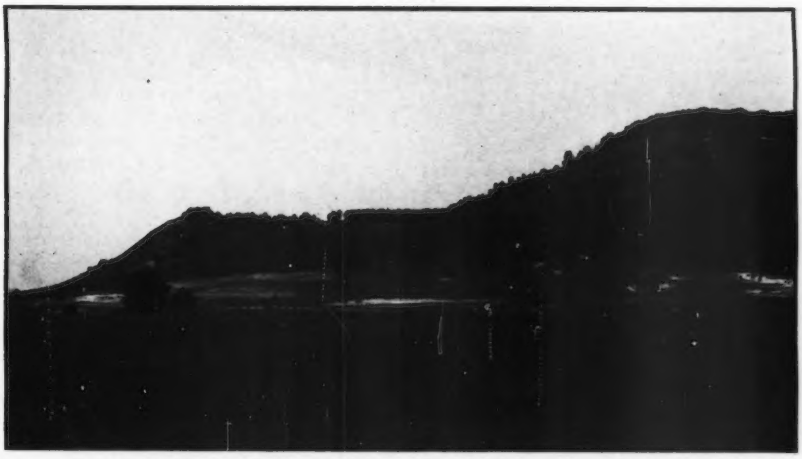


FIG. 2. Typical habitat of *Opuntia rafinesquii* which is most numerous along the Wisconsin River, from Adams county down the river valley to where it joints the Mississippi River. It is found in Marquette and Green Lake counties around the town of Marquette. In Green county it is found around New Glarus.

Coming back to the car, the men were called together and it was decided to eat dinner at the hotel in Spring Green. After dinner the group drove back to the location and a few more details were taken care of before starting for home.

On the way back we traveled through a country of steep hills. The road wound into the valleys and up the sides of hills covered with oaks and maples. Mr. Fuller had a few surprises for us. One was a natural bridge, a sandstone formation washed out by water and worn by weather, and having a span of about sixty feet. This was a spot of extreme natural beauty. The other was a climb up a steep hill. This hill stood out from the others like a gigantic finger. On the end, weather had formed a huge resemblance to an hourglass and also formed a needle's eye near the tip of the finger. On either side of the narrow path was a sheer wall with a drop of two hundred feet. From here we looked over miles of beautiful wooded and barren rock hills. It was late afternoon before we left this rugged country of southwestern Wisconsin.

HOBBY SHOW

Last spring the Puget Sound Power and Light Co.'s 3500 employees held a hobby show in Seattle, Wash., with an estimated attendance of 257,000.

There were 205 hobbies represented and Society member, A. S. Harmer's display of cactus was awarded 7th place.

Each visitor, upon entering, was handed a ballot on which they were asked to indicate their choice for the first five displays according to general merit. Thus 5 points for 1st, 4 points for 2nd, 3 points for 3rd, 2 points for 4th, and one point for 5th place.

There were many surprises in evidence. It was indeed revealing to learn the interests of various people in various positions; a service dispatcher with a display of hammered brass and copper that would do justice to a metal-smith; a man from the advertising department with a home brew concrete mixer made from stray automobile parts and a discarded oil can; a caretaker with models of ships as fine as ever sailed the seven seas; a hydro station operator with specimens of cactus from all points of the compass, and so on. A great deal of energy, care, and ingenuity was on parade and a generous amount of perspiration was shed by the spectators in deciding which displays were best.

CACTUS WOOD USED IN VIOLIN

(From Los Angeles Times)

TUCSON (Ariz.)—"There's nothing like wood whittled from the ribs of giant sahuaro cacti to give a violin reasonance and purity of tone.

"This was only his theory until proved by Oscar T. Jones, World War veteran who came from Arkansas two years ago to be near the United States Veterans' Hospital here.

"Out of ribs chosen from sahuaros that were hundreds of years old before they tumbled to the ground and all but their skeletal framework disintegrated under the desert sun, Jones fashioned a violin that brought pleas to 'name your own price' after it was played by his son at a Christmas celebration.

"But he refused all offers, asserting that the 'cactus fiddle' was not quite finished. Besides, he intends to make all instruments for a complete orchestra, including strings and woodwinds, out of sahuaro wood.

"Jones believes that the peculiar porous structure of saguaro ribs is what gives his violin its remarkable resonance."

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CULTIVATION OF SUCCULENTS IN SEATTLE, WASHINGTON

By MRS. HARRY H. LEWIS

No two grow our cactus plants exactly alike so no hard and fast rules can be given on cultivation. Proper cultivation comes only with study and observation and adaptation to one's own particular conditions. Nearly every authority gives different cultivation notes, chiefly because he is writing or talking about cultivation in his particular section of the country.

The one-third sand, one-third leafmold and one-third garden soil that many California growers use, might give an entirely different mixture than the same combination mixed here. Many of them use a decomposed granite for their sand portion, which is entirely different from our local sand, being much coarser and grittier. The basis of much of their soil is a heavy black clay, sticky and inclined to hold moisture, while most of our local soil is light and porous, just about the direct opposite. The general mixture here could be the one-third lake or river sand (not salt water unless it is thoroughly washed), one-third *good* garden soil—by that I mean soil that has been cultivated and built up so that it will really grow a good garden, and the one-third humus. I know one grower here who is successfully raising cacti in nothing but this sandy soil that has been under cultivation long enough to bring up the humus content.

Most authorities recommend leafmold for this humus portion because it is cleaner and free from dangerous disease germs and animal life. Real old cow manure that is loose and crumbly can be substituted if it is sterilized before using. This is done by heating until it feels hot and steamy all through. Too much heat will destroy the beneficial bacteria, and I only sterilize soil when I feel that is absolutely necessary. This summer I have been using a black peat soil (not peat moss) for the humus portion and I find it is a good substitute. The main thing in the soil mixture is to build up a combination that won't become hard and crusty. It should always be loose and porous enough to allow water to pass through it quickly and freely. This mixture could be the basic mixture varying it slightly for the different plant requirements.

The real hairy Cerei will like more sand, and a little lime—about one part to twenty or twenty-five parts soil. Echinocereus, most Opuntias, barrel types, Astrophytum, Ariocarpus, Neoloydia, Coryphantha and many of the slow-growing or white-spined Mammillarias will all thrive best in this poorer mixture. Several years ago I gave my mother a *Mammillaria erythrosperma* planted in our sandy garden soil that had been fertilized for iris with bone meal and lime. Today it is one of the handsomest clusters that I have ever seen and mine planted in a much richer soil did not survive last winter's resting period.

For faster growing plants such as the Christmas cactus, Epiphyllum, Rhipsalis, Rat-tail, Chamaecereus, fast growing vine-like types, real green Cereus and all grafted plants, the mixture could be a little richer in humus. Cleistocacti like this richer mixture, so do Borzicacti and Nyctocerei, but the last two will like some lime added. Echinopsis and the South American Echinocactus generally, will do well in the basic mixture. This would include ungrafted species of Rebutias, Lobivias, Gymnocalyciums, and Notocactus species.

Most of the natives of our southwestern deserts require the most sun heat, the sandiest soil and are the real lime lovers. And a great many of them will not take kindly to cultivation, no matter what you give them, perhaps because we cannot duplicate the intense dry heat that many of them get.

The best source of lime is in the form of old plaster, mortar rubble, or decomposed shells, pounded to a gritty texture, and allowed to weather until the salt is washed out. You can prepare this yourself from clam and oyster shells or I believe it can be purchased at stores handling poultry supplies. Garden lime can be used but this will in time bleach out by continued watering. If your plants are growing and thriving, don't change to someone else's method. Cacti will grow and thrive under a variety of different conditions. The main thing is to get a proper balance of soil, sunheat and moisture for your own particular conditions. Plants having greenhouse conditions where they will get many hours of warm sun daily, will stand a richer soil and more water than the same plants grown in a cool living room. Don't let their peculiar forms mystify you too much. After all, they are perennial plants and not too fussy about soil.

Perhaps their greatest dislike is poor drainage, and too much water at the wrong season of the year is the one thing they will not tolerate. The faster growing plants I mentioned will require the most water. Even in winter most of them shouldn't be kept too dry. The stocks of grafted plants especially, should be watched carefully; too much shrivelling will very definitely injure them. July and August they require the most water. Thoroughly saturate the soil and

then don't water again until they are really dried out. In small pots, this may mean daily but planted in boxes as most of mine are, I need to water only about once a week. Watch those that started growth early, and if they have stopped growth keep these a little drier. If you can't give them at least a few hours of sun daily move them outside, sheltering with a cheesecloth covering so that the hot sun will not burn them. Moving cacti outdoors keeps them from getting too tender and delicate and makes them better able to stand the winter resting period.

If the Christmas cactus and Epiphyllums are moved outdoors, put them where they will receive some sun, either the early morning and late afternoon, or partially shaded by trees and shrubs. They very definitely flower better if kept outside during the warm months. Keep these plants damp all the time. By the first of October, let the Christmas cactus dry out enough to stop foliage growth and by the first of November, buds should appear. This drying out can be given the Epiphyllums in November and December. The Rat-tail and the Chamaecereus (Peanut), are more apt to flower if they are given this drying out, or rest, in November and December, especially if we get some real sunny days in January. Those slow-growing plants liking lime and a sandy soil require the least water. Drainage must be especially good for these, and let the soil *thoroughly* dry out before again giving them water. In winter they should be kept quite cool, so that watering can be cut to practically nothing. If your collection is planted in small pots, they will require a little, probably once a week, even in winter.

As the cooler days of fall arrive, cut down on watering, on all plants except the Christmas Cactus, Rhipsalis and Epiphyllums, and if possible keep them in an unheated room from October to March, opening the windows once in a while to keep the air fresh, water sparingly, and only on sunny days. I keep mine in front of a south window during the winter months. Nearly all plants will stand down to 38° if they are kept dry, and try if possible to keep them below 60° during the winter months. If we are lucky enough to get several weeks of sunny weather in January many of the early flowering species will bud, especially if kept in a south window. Watch out for scorching at this time of the year, and if they are kept close to the glass, shade them slightly because they will burn easily after a long period of sunless days. Those that do bud or begin growth at this time will require a little more water. But don't be too generous with water at this time, because this is the period when they are apt to rot if overwatered. Increase the amount of water as the weather gets warmer, always keeping the water a little warmer than the temperature of the room. I have found that the Texas *Echinocerei* produce the best flowers if they are left out-of-doors all the time. In winter, I keep mine under a glass frame, and do not water at all. Toward the end of summer cut down on water to allow them a chance to mature before the cold weather comes. Keep them in full sun all the time and they will bloom in June.

I have always had trouble flowering Echinopsis in the house, so this year I moved them to a cold frame as soon as our frosty weather was over, and then out in the open as soon as the real sunny days came. They were unusually healthy and bloomed in July. These plants will stand lots of water during the summer months.

I am inclined to believe that the South American Echinocacti will be the easiest to flower without a greenhouse. The Gymnocalyciums, Parodias, Notocacti and some of the Rebutias have all done very well with only the afternoon sun that I can give them. One reason for this, I think, is because they don't bud up until our sunny days are definitely here.

In buying plants that come from a distance it would be best to get the majority of them early in the spring, plant them in slightly moist sand and keep them warm until the roots start new growth. The roots will often die in shipping and they must be watched closely for rot. Water sparingly until they are again in a growing condition.

New plants are easily started from cuttings by allowing the cut surface to heal for two or three weeks or until they are thoroughly calloused and then plant in warm moist sand. Some species will root quickly and others may take a year or longer before new growth is started.

Learn to graft those plants that do not do well on their own roots. As new knobs form on your plants, graft some of these to have as spares in case something happens to the original plants, and it happens to the best of us. Grafting not only makes slow growing species grow faster but it is the quickest way to give a root system to a cutting. But don't try to graft anything but a cactus on a cactus. Nearly all of the better growers are grafting their "difficult" plants so that the soil problem is no longer such a worry.

For spraying, I have found that "Slug Shot" a rhotenone-pyrethum solution is the most effective, mixing a teaspoonful to a quart of water. It will kill insect life in the soil if the soil is thoroughly saturated with it. If mealy bugs are found on the roots when transplanting, wash off all the dirt with warm water, swish the roots around in this spray solution and then let them thoroughly dry off before transplanting.